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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,931	01/29/2004	Youichi Kukimoto	Q79041	1863

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,931	KUKIMOTO ET AL.	
	Examiner	Art Unit	
	Khiem D. Nguyen	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>06/28/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Information Disclosure Statement***

The Information Disclosure Statement filed on June 28th, 2004 has been considered.

Claim Rejections - 35 USC § 102

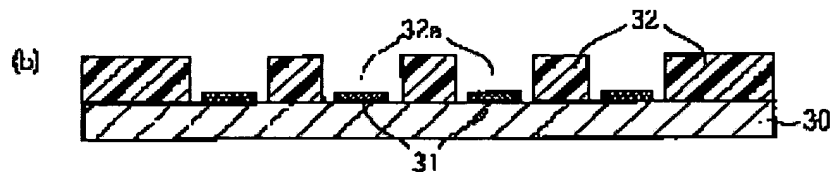
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakuyama Seiki ("Method for forming bump", Japan Publication number 2002-334895, translation).

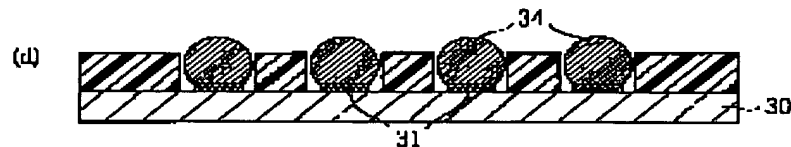
In re claim 1, Sakuyama discloses a solder deposition method comprising the steps of: forming a dam 32 around an electrode 31 on a substrate 30 (Detailed Description, pages 1-2, paragraph [0006] and FIG. 3b);



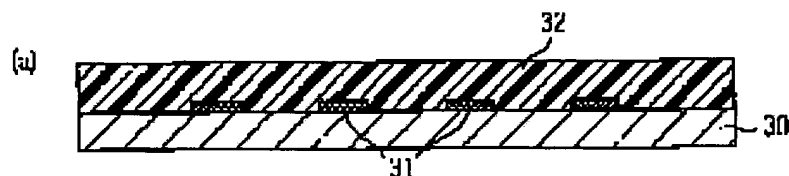
applying a solder precipitating composition 33 to the substrate 30 (FIG. 3c); and



depositing solder 34 on the surface of the electrode 31 while heating the solder precipitating composition 33 applied (page 2, paragraph [0006] and FIG. 3d).



In re claim 2, Sakuyama discloses that the step of forming a dam includes the steps of: forming a resin film 32 on the surface of the substrate 30 (FIG. 3a); and

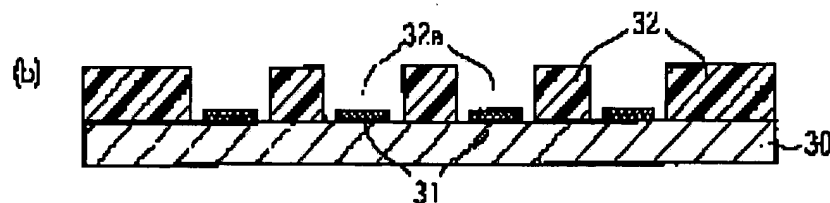


providing an opening part 32a in said resin film 32 so that a dam is formed around an electrode 31 on a substrate 30 (pages 1-2, paragraph [0006]).

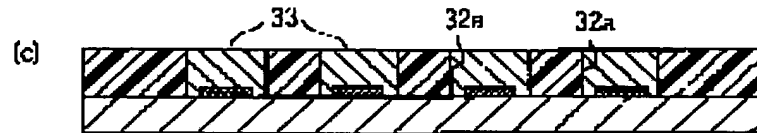
In re claim 3, Sakuyama discloses that the dam 32 is not removed after depositing solder 34 (FIG. 3d).

In re claim 4, Sakuyama discloses that the substrate is a via-on-pad structured substrate (pages 1-2, paragraph [0006] and FIGS. 3(a)-(e)).

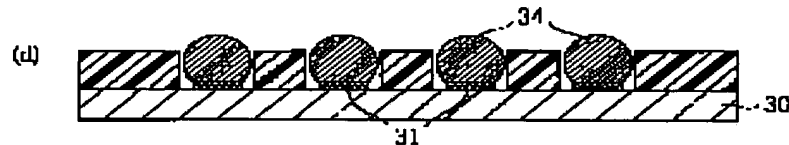
In re claim 7, Skuyama discloses a solder bump forming method comprising the steps of: forming a dam 32 around an electrode 31 on a substrate 30 (Detailed Description, pages 1-2, paragraph [0006] and FIG. 3b);



applying a solder precipitating composition 33 to the substrate 30 (FIG. 3c); and



forming a solder bump 34 by depositing solder on the surface of the electrode 31 while heating the solder precipitating composition 33 applied (page 2, paragraph [0006] and FIG. 3d).



Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuyama

Seiki ("Method for forming bump", Japan Publication number 2002-334895, translation)

in view of Ikeda et al. (U.S. Patent 6,923,875).

In re claims 5-6, **Sakuyama** does not explicitly teach that the solder precipitating composition contains tin powder; and a complex of at least one selected from silver ions and copper ions, and at least one selected from aryl phosphines, alkyl phosphines and azoles as recited in the dependent claim 5, and that the solder precipitating composition

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contains tin powder and salt of at least one metal selected from lead, copper and silver as recited in dependent claim 6.

Ikeda, however, discloses that the solder precipitating composition contains tin powder; and a complex of at least one selected from silver ions and copper ions, and at least one selected from aryl phosphines, alkyl phosphines and azoles (col. 1, line 64 to col. 2, line 11),

The solder precipitating composition of the present invention comprises a tin powder; and a complex of at least one selected from silver ions and copper ions and at least one selected from aryl phosphines, alkyl phosphines and azoles.

and that the solder precipitating composition contains tin powder and salt of at least one metal selected from lead, copper and silver (col. 1, lines 44-49).

According to the principle of alloy formation by the above solder precipitating composition, it is also possible to obtain the lead-free solder with use of tin powder and a silver salt or a copper salt, where the substitution between a portion of tin particle and such organometallic salts gives lead-free alloys as described above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Sakuyama and Ikeda to enable the process of applying a solder precipitating composition contains tin powder and a complex of at least one selected from silver ions and copper ions, and at least one selected from aryl phosphines, alkyl phosphines and azoles of Takahashi to be performed and furthermore to provide a solder precipitation method in which solder precipitating compositions would give proper lead-free solders on the lands of a circuit board (col. 2, lines 4-7, Ikeda).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.N.
August 3rd, 2005



**W. DAVID COLEMAN
PRIMARY EXAMINER**